DIMINUTIVE SPLEEN.

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On March 28, 1901, a native Filipino woman, formerly an inmate of the San Lazaro Hospital, Manila, P. I., for leprosy, came to autopsy. Decomposition was well advanced. Body that of a woman about thirty years of age, well built, fairly well nourished, presented no abnormalities, nor any signs of advanced leprosy. On opening thorax and abdomen no abnormalities were noted until a search for the spleen was made. A small spleen, at first taken for an accessory spleen, was seen on the surface of a mass of adipose tissue occupying the space usually filled by the spleen. On more careful search, after removing and cutting the mass of fat into small pieces, no further trace of splenic tissue was found. The spleen was 32 mm. long, 10 mm. wide, and 9 mm. thick at thickest point; and weighed $2\frac{1}{10}$ grams. In shape it simulated a normal organ. Color was a little deeper than the normal, suggesting the color of a malarial spleen; capsule smooth, slightly thickened, and regular; bloodvessels, normal. Organ was firm. One or two subcapsular hemorrhages were noted. Two blocks from opposite sides were removed for histological study. Sections, stained in hæmatoxylin and eosin, showed a slightly thickened capsule, abundant thickened trabeculæ, numerous large arteries, with much thickened and degenerated walls, in which lime was deposited and endothelium thickened. Splenic pulp was much diminished. One Malpighian corpuscle was noted. This was small and mostly composed of connective tissue. The spleen in no way suggests contraction from inflammatory processes as a cause for its size. The retroperitoneal lymphatic glands were large and calcified.

Through the kindness of Dr. N. F. Baker, of Fulton, Mo., I had the opportunity to examine one case of acephalus, full term, in which a small spleen and symmetrical liver, the left lobe filling the left hypochondriac region, were found.

I found, upon inquiry, a scanty literature on diminutive spleen, and few cases reported of absence of spleen. Ziegler says that "the complete absence of the spleen is rare and usually occurs in well-built individuals." Birch-Hirschfeld says: "Absence of spleen is often associated with acephalics and extensive malformation of the abdominal organs." Otto failed to find the spleen in a well-formed five months' fœtus. Birch-Hirschfeld failed to find a spleen in a newly born child, in which the liver was symmetrical and filled the left hypochondriac region. Robert failed to find a spleen in a three-year-old child; in this case the stomach was tubular.

In the case of Arnold there were malformation of the heart, defect in spleen, and enlarged lymph nodes. Rudimentary development of spleen is frequent.

Paulesco found a spleen 5 cm. long, 1 cm. wide, and 26 mm. thick on the surface of a mass of fatty tissue occupying the usual splenic position. No abnormalities or enlarged mesenteric glands were found. Meinhard in 1845 and Koch and Wachsmuth in 1879 report one case each of complete absence of spleen in otherwise normal adults, ages fifty-seven and forty-nine respectively. In 1896 Maximiliano Olaechea reports complete absence of spleen in a fatal case of typhoid. All organs were normal save enlarged mesenteric and bronchial lymphatic glands. Hodenpyl in 1897 reports complete absence of spleen in a male adult thirty-two years old. In this case the mesenteric and retroperitoneal glands were enlarged. Bidner reports a case of absence of spleen in an acephalic with enlarged lymphatic glands in abdomen.

Cases of absence of spleen: Martin, 1; Birch-Hirschfeld, 1; Meinhard, 1; Koch and Wachsmuth, 1; Libby, 1; Ramsey, 1; Olaechea, 1; Hodenpyl, 1; Patillani and Moroni, 1; Arnold, 1; Bidner, 1; Otto, 1; total 12. Doubtless several more cases have been noted, as the absence of spleen in monsters is mentioned as early as 1564, and again by Heusinger in 1820.

Rudimentary spleen: Paulisco, 1.

The literature on atrophic spleens is more extensive and treats largely with conditions secondary to pathological lesions, or to atrophic conditions of the spleen. Judging from the gross and microscopic conditions of the spleen, described above, its diminutive size was not due to contractions from pathological lesions late in life, but to arrest in development, most probably early in embryonic life. In the literature at hand a larger number of cases of complete absence of spleen than diminutive spleens is found.

Clinically, in diseases associated with enlargement of the spleen, the absence of or a diminutive spleen may become of considerable importance. Normally, the upper extremity of the spleen is situated a few centimetres to the left of the body of the tenth thoracic vertebra. The upper and lower borders are parallel to the ninth and eleventh ribs, respectively, as far forward as the midline or anterior axillary line, near which lines the rounded lower extremity is located. About one-third of the upper portion, that portion separated from the thoracic wall by the diaphragm, is covered from above by the lower margin of the left lung. Ordinarily, at the scapular line the lower margin of the lung is at the ninth rib and at the vertebral column as low as the eleventh rib. The line of the lower margin of the lung is nearly horizontal, and consequently forms an acute angle with the line of the upper border of the spleen, which is inclined slightly downward—pulmonosplenic angle. Consequently, on percussion a relatively dull splenic note is elicited in a triangular area bounded above by the ninth rib, below by the lower border of lung, indicated by a line extending from the articulation of the eleventh rib at vertebral column to the ninth rib at scapula line, and to right by vertebral column. The remainder of the splenic area elicits a dull note, save when mixed with tympany due to a distended stomach or colon. To the right the splenic dulness extends into the dulness of the spinal column. Owing to its position under the diaphragm, enlargement of the spleen with a corresponding enlargement of splenic dulness takes a downward and forward course. In case of dislocation a downward and forward course is usually taken. In these cases the relative splenic dulness may be absent or greatly diminished, and an area of tympany may be found between the upper extremity of spleen and vertebral column. But the outline of the spleen is not necessarily altered.

The literature indicates that in most, if not all, of the cases in which there is no spleen or a very small spleen, the usual splenic space is occupied by an irregular mass of fat, which may not simulate, either in shape or size, the spleen. In the case at hand the mass of fat in which the small spleen was found seemed to be continuous with the omentum, was of a globular shape, much smaller than an ordinary spleen, and was located farther toward the left side than the upper extremity of the spleen. Owing to its consistency the fat should give a percussion note relatively equal to that of the spleen.

In the cases of Koch and Wachsmuth, Paulesco, and Olaechea, typhoid fever was the cause of death, and in each the authors were unable to find the spleen. From their post-mortem records, especially that of Paulesco, and from my case, it occurs to me that the following factors might aid in determining the presence or absence of a spleen in these doubtful cases:

1. If the mass of fat were outlined its shape would be irregular, and other than the oblong or splenic outline; more round.
2. The posterior border would be farther from the vertebral column, leaving possibly a narrow tympanitic area between the mass and the vertebral column.
3. The relative splenic dulness in the lower posterior border of the lung would be absent or moved anterior, and the splenic angle would be materially changed or absent.
4. Traube's similunar space would extend farther posteriorly.
5. The size and shape of the mass of fat would remain practically constant.

In cases of dislocation of the spleen, which usually take a forward and downward direction, the tympanitic area near the vertebral column would be present, but here the usual splenic outline would be found and the edge of the spleen probably could be palpated at the lower margin of the thoracic wall.

In the case under consideration the *flexura coli sinistra* could dislocate the mass of fat more easily than it sometimes displaces the spleen, to give a tympanitic note over the otherwise dull area. Naturally, if tympany obscured the splenic area from day to day no further data regarding the spleen could be collected.

LITERATURE.

M Gonzaly Olaechea. Caso raro de ausencia del bazo. Cron. méd., Lima, 1896, xiii., 147.

E. Hodenpyl. A Case of Apparent Absence of the Spleen, with General Compensatory Lymphatic Hyperplasia. Proc. New York Path. Soc. (1897-98), 1899, p. 185.

Paulesco. Sur un cas d'arrêt dans le developpement de la rate. Journ. de méd. int., Paris, 1898, ii., 114.

Hodenpyl's article collects most of the literature. All of the remaining literature may be found in the Index Catalogue of the Library of the Surgeon-General's Office.

TORSION OF THE GREAT OMENTUM.

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Introduction. In the first volume of the *Annals of Surgery*, pp. 405–430, published in 1900, Mr. Lawford Knaggs, of Leeds, drew attention to the occurrence of volvulus or torsion of the intestine associated with a hernia. His interest had been drawn to the subject by two cases which occurred in his private practice. Both examples presented well-marked signs and symptoms of the curious condition present, so that it could not be overlooked. In the accounts of other examples which are given it is noteworthy that a very large number were fatal. The evolution of our knowledge of any disease is almost always the same. The severe and fatal forms first attract attention; later, other and milder clinical manifestations are recognized; and, finally, given the necessary circumstances (such as the presence of a hernia, as in this example), the condition is recognized as occurring frequently. Mr. Lawford Knaggs' paper is really an introduction of the subject from the period of rarity to the middle stage. As yet it has not advanced to the third or "frequent" stage. Though only writing on a kindred subject, torsion of the omentum and not of the bowel, we must express our opinion that volvulus is a very common consequence of the strangulation of a hernia. When the strangulation is at the hernial orifice, this becomes the fixed point about which the protruded loop of bowel twists. The twisting agents are, firstly, the meteorism in the strangulated coil; and, secondly, the movements of flexion of the thigh.